

REMARKS

In the Office Action, claims 1-3, 5, 16-18 and 20 are rejected under 35 U.S.C. §102 as allegedly anticipated by U.S. Patent No. 6,178,272 to Segman (“Segman”), claims 4 and 19 are rejected under 35 U.S.C. §103 as allegedly unpatentable over Segman in view of U.S. Patent No. 5,091,972 to Kwon et al. (“Kwon”) and claims 6 and 7 are rejected under 35 U.S.C. §103 as allegedly unpatentable over Segman in view of U.S. Patent No. 6,340,114 to Correa et al. (“Correa”).

Claim Rejections under 35 U.S.C. §102

Applicant respectfully traverses the §102 rejections of claims 1-3 and 16-18 for at least the reason that Segman does not teach every aspect of the claimed inventions either explicitly or impliedly. Applicant respectfully asserts that the interpretation of the teaching of Segman as cited in the Office Action is overly broad and unsustainable in view of the structures and elements recited in the claims. For example, claims 1 and 16 require, *inter alia*, calculating an absolute location of identified acquired image feature centers in fiducial plate coordinates. Segman cannot be said to teach either the elements this limitation nor any combination of elements that could obtain a similar effect or result.

Segman does not teach or suggest, *inter alia*, the physical elements or structures required by the claims of the present application. Instead, Segman is directed to mathematical methods that are to be applied in a field of endeavor that is different from the field of the presently claimed inventions. As described in its Summary section, Segman deals with resolution issues associated with image scaling and, in particular, to the problems that accrue from mathematically scaling and transforming an image to obtain an output aspect ratio that is different from a corresponding input aspect ratio. In its detailed description, Segman discusses the use of mathematically constructed grids of input and output pixels in order to calculate a suitable non-linear transform. It is unsurprising therefore, that Segman lacks the physical elements required in the claims of the present application. As will be discussed in greater detail below, one example of a physical element absent from Segman is the fiducial plate required in claim 1. Another example of this Segman deficiency is the absence in Segman of any teaching of absolute locations of acquired image features.

Nevertheless, the Office Action suggests that the output grid taught by Segman is equivalent to a fiducial plate. Applicant respectfully disagrees. Fiducial plates are physical components that are well known in the art. Segman does not teach, suggest or even refer

tangentially to a fiducial plate. The Background section in the disclosure of the present invention is instructive:

In many conventional image acquisition and image data processing systems, feature geometry of a known, highly accurate artifact may become distorted during imaging, data processing, or both. One such situation may arise where a precision Cartesian grid (or array) of points printed on glass or other substrate material is imaged using optics and a camera, such as a charge-coupled device (CCD) camera, for example, or a complementary metal-oxide semiconductor (CMOS) imaging device. Such artifact features may be referred to as fiducials, and the foregoing substrate having a known pattern of fiducials printed thereon, or incorporated into the structure thereof, may be referred to as a fiducial plate.

Specification at page 1, lines 13-20. Nothing in Segman teaches or suggests a fiducial plate as it is known in the art or defined in the Specification. Segman does not teach that its output grid comprises a precision artifact or is created as a precision array of points printed on a substrate. The contrary suggestion, implicit in the Office Action, is unsupportable and is hence unreasonable. For this reason alone, the 102 rejection of claims 1 and 16 are improper.

The rejections of claims 1 and 16 are improper for additional reasons. For example, Segman cannot reasonably be said to calculate absolute locations of acquired image feature centers. Segman is unconcerned with the features of an acquired image for which a center could be calculated. Segman is concerned only with resolution conversion of images and approximations that include adding and deleting pixels and estimating values of missing pixels when resolution of the image is changed. See, e.g., Segman, col. 1, lines 44-64.

Segman does not care if approximated pixels lie at the center of a feature of an acquired image. Nevertheless, the Office Action attempts to support its rejection of the claims by equating Segman's input pixel grid to an acquired image and Segman's output pixel grid to a fiducial plate. Even so, the rejection is internally unsound. In order to support the rejection, one would have to believe that Segman teaches the calculation an absolute location of the center of an image feature in its input grid expressed in coordinates of its output pixel grid.

Segman provides no such teaching. Segman is silent regarding acquired image features or the center point of such acquired image features. Even allowing an excessive degree of latitude regarding the interpretation offered in the Office Action, the Segman pixel grid is not an acquired pixel grid but is arbitrarily defined or, at most, dictated by the predefined resolution of the image. The Segman pixel grid comprises pixels located at the intersection of arbitrarily defined rows and columns and is identified as a point location. Segman lacks any teaching of calculating the location of a center of a *point* in a grid and

Applicant respectfully submits that it is unreasonable to assert that Segman would be interested in calculating the location of a known point location in its predefined input grid.

Moreover, even if Segman could be said to teach image features in a pixel grid as supposed by the Office Action, it would be nonsensical for Segman to teach a calculation as recited in claims 1 and 16. Segman is directed to a method for scaling images and image resolution conversion. See, e.g., Segman Abstract. Consequently, the Segman method alters the physical dimensions of an image – and, by extension, any subject or feature contained in the image – to fit within a scaled output image defined by its output grid. There is no direct relationship between the respective coordinate systems of the Segman input and output pixel grids. The relationship between these coordinate systems/pixel grids is the subject of Segman's invention and involves scaling, approximations and approximation errors. Thus, in order to accept the grounds for rejection set forth by the Office Action, one must believe that Segman teaches mapping and approximating input coordinates to output coordinates, calculating the location of a center of an image feature in a scaled output image using output coordinates and then describing the absolute location of the center of a corresponding image feature in the input image using the calculated output coordinates. The latter description would produce location coordinates that could not be used with regard to an input image unless the coordinates were subjected to a reverse mapping and approximating process to convert output coordinates back to input coordinates. Applicants note the additional disadvantage that the results of such convoluted calculation would result in multiplication of unnecessary approximation errors. Applicant submits that the interpretation of Segman provided in the Office Action misconstrues the teachings of Segman in a way that would produce a disadvantageous result and that serves no useful purpose in the context of the objectives of Segman. Therefore, the citation of Segman is fanciful.

Applicant observes that, in rejecting claims 5 and 20, the Examiner admits that Segman does not “disclose any information regarding the rotation or angles of the image apparatus.” Applicant cannot find any reference to imaging apparatus, camera or even image capture in Segman. Nor does the Office Action explicitly identify a textual passage or drawing that teaches the data acquired by an imaging apparatus that is required in claim 1.

It should be apparent from the above discussion that Segman and the presently claimed inventions are directed to different fields of endeavor, attempt to solve different problems and employ different processes and components. Segman lacks all the elements of the claims, does not teach the elements of the claims arranged as they are in the claims and

fails to produce the claimed results. Therefore, the §102 rejections of claims 1 and 16 are improper and should be withdrawn.

Each of claims 2-3, 5, 17-18 and 20 depend from claims 1 and 16 and are allowable for at least the reasons claims 1 and 16 are allowable. Regarding claims 2 and 17, Applicant observes that Segman does not teach fiducial, imaging apparatus or identifying fiducial coordinates for each fiducial captured in said data acquired by imaging apparatus. As cited, Segman engages in a discussion regarding chrominance and luminance in a video image. As cited, Segman contains nothing of relevance to the additional limitations of claims 3 and 18. Therefore, the rejections of claims 2-3 and 17-18 are improper and should be withdrawn.

Claim Rejections under 35 U.S.C. §103

The rejections of claims 4, 6-7 and 19 should be withdrawn for at least the reason that Kwon and Correa do not cure the deficiencies of Segman. With regard to the rejections of claims 6 and 7, Segman provides no mention of an imaging apparatus. For these and other reasons, the rejections of claims 4, 6-7 and 19 should be withdrawn.

CONCLUSION

All objections and rejections having been addressed, and in view of the foregoing, the claims are believed to be in form for allowance, and such action is hereby solicited. The Examiner is kindly requested to contact the undersigned at the telephone number listed below if any points remain in issue which may best be resolved through a personal or telephone interview.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,
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